Ladders

Ladders of all types are used in residential construction work. Within the construction industry, falls from ladders, scaffolds, and roofs represent the vast majority of all fall-from-elevation injuries. The largest proportion of injuries associated with falls from ladders occur in carpentry and residential construction trades - caused primarily by slips, loss of footing, and shifting or unstable ladders.

General Ladder Requirements

The following general ladder requirements are especially relevant to residential-type construction. Use the corresponding paragraph number (or numbers) to find the exact wording in Subpart X.

Ladder components and injury prevention

Ladders must be surfaced to prevent puncture injuries, lacerations, or snagging workers' clothing. ***29 CFR 1926.1053(a)(11)***

Load capacities for portable ladders

Self-supporting portable ladders must be able to support at least four times the maximum intended load.

29 CFR 1926.1053(a)(1)

Rungs, cleats, and steps

Ladder rungs, cleats, and steps must be parallel, level, and uniformly spaced not less than 10 nor more than 14 inches apart. Rungs and steps must be shaped or treated to minimize slipping.

29 CFR 1926.1053(a)(2), (3), (5), (6)

Spreaders and locking devices

A metal spreader or locking device is required to hold the front and back section of a stepladder in an open position when the ladder is being used. ***29 CFR 1926.1053(a)(8)***

Portable ladders

The minimum clear distance between side rails for portable ladders must be at least 11 ½ inches.

29 CFR 1926.1053(a)(4)

Tying ladders together

Ladders cannot be tied or fastened together to make longer sections unless they are designed for such use. ***29 CFR 1926.1053(a)(7)***

Using two or more ladders

When two or more separate ladders are used to gain access to an elevated work area, the ladders must be offset with a platform or landing between them. ***29 CFR 1926.1053(a)(10)***

Coating wood ladders

Wood ladders cannot be coated with any opaque covering, except for identification or warning labels that may be placed only on one face of a side rail. ***29 CFR 1926.1053(a)(12)***

Safe Use Requirements

Subpart X also includes requirements for using ladders safely.

The list below summarizes the requirements from ***29 CFR 1926.1053(b).***

Angle non-self-supporting ladders so that the horizontal distance from the top support to the foot of the ladder is approximately one-quarter of the working length of the ladder.

29 CFR 1926.1053(b)(5)

Angle wood job-made ladders so that the horizontal distance is one-eighth the working length of the ladder.

29 CFR 1926.1053(b)(5)

Don't use ladders on slippery surfaces unless they are secured or have slip-resistant feet.

29 CFR 1926.1053(b)(7)

Don't climb on the ladder's cross-bracing.

29 CFR 1926.1053(b)(14)

Don't overload ladders.

29 CFR 1926.1053(b)(3)

Don't move a ladder when someone is on it.

29 CFR 1926.1053(b)(11)

Don't step on the top step.

29 CFR 1926.1053(b)(13)

Don't try to carry unwieldy objects when you climb a ladder.

29 CFR 1926.1053(b)(22)

Don't use single-rail ladders.

29 CFR 1926.1053(b)(19)

Extend side rails of portable ladders at least three feet above an upper landing surface.

29 CFR 1926.1053(b)(1)

Face the ladder when you climb or descend it.

29 CFR 1926.1053(b)(20)

Have a competent person inspect ladders regularly for visible defects and after any event that might have damaged them.

29 CFR 1926.1053(b)(15)

Identify any portable ladder with a structural defect and remove it from service until it is repaired.

29 CFR 1926.1053(b)(16), (17), (18)

Keep the area around the top and bottom of a ladder clear at all times.

29 CFR 1926.1053 (b)(9)

Keep the ladder slip free.

29 CFR 1926.1053(b)(2)

Place the top of a non-self-supporting ladder so that the two rails are supported equally unless it is equipped with a single support attachment.

29 CFR 1926.1053(b)(10)

Secure ladders when they are used in any location where they can be displaced by workplace activities, or use a barricade to keep the traffic away from the ladder.

29 CFR 1926.1053(b) (8)

Use ladders only for appropriate tasks.

29 CFR 1926.1053(b)(4)

Use ladders only on stable surfaces.

29 CFR 1926.1053(b)(6)

Use only ladders that have non conductive side rails (if they could contact exposed energized electrical equipment).

29 CFR 1926.1053(b)(12)

Remember: Ladders are designed to be stable only when they are set up properly and the worker stays within the side rails.

Training Requirements

Employers must train workers to recognize hazards associated with ladders and to use appropriate procedures to minimize the hazards. Specifically, each worker must be trained by a

competent person to understand:

The nature of fall hazards in the work area.

The proper construction, use, placement, and care of ladders.

The maximum intended load-carrying capacities of ladders used.

The ladder requirements in Subpart X.

Retraining must be offered periodically so that workers maintain their understanding of these

requirements.

Scaffolds

The basic definition of a scaffold is a temporary elevated platform and supporting structure that holds workers and materials. As it reads, the definition means even an upside-down bucket qualifies as a scaffold. Some construction workers and employers apply the definition literally and use unstable, makeshift "scaffolds" to work above a lower level. They probably do not know

that 80 percent of scaffold injuries are caused by falls from unstable structures. It is likely they are unaware of OSHA's scaffold requirements, and have never been properly trained to work safely at exposed heights.

Consider the following scaffold facts:

Falls are the leading cause of scaffold-related injuries.

Most scaffold accidents are caused by improperly altering the scaffold structure, failing to

follow standards, and inadequate training.

Persons who set up and dismantle scaffolds are especially at risk because they work on

incomplete structures.

Everyone who uses scaffolds - not just those who erect and dismantle them - should be familiar

with how the structures are built and their safety requirements.

General Scaffold Requirements from Subpart L

OSHA's general requirements for scaffolds are in Subpart L. The requirements are summarized below. Use the corresponding paragraph number (or numbers) to look up the complete requirement.

Set up, moving, dismantling

Scaffolds cannot be set up, moved, dismantled, or altered except under the supervision of a competent person.

29 CFR 1926.451(f)(7)

Footing

Supported scaffold poles, legs, posts, frames, and uprights shall bear on base plates and mud sills or other adequate firm foundation.

Footings shall be level, sound, rigid, and capable of supporting the loaded scaffold without settling or displacement.

Unstable objects shall not be used to support scaffolds or platform units.

Unstable objects shall not be used as working platforms.

29 CFR 1926.451(c)(2)

Guardrails and Toeboards

Each employee on a scaffold more than 10 feet (3.1 m) above a lower level shall be protected from falling to that lower level.

29 CFR 1926.451(g)(1)

Guardrails must be 2x4 or the equivalent and approximately 42 inches high with a midrail. The supports must not be more than eight feet apart. Toe boards must be at least four inches high.

29 CFR 1926.451(a)(5)

Falling object protection

Anyone working on a scaffold must be protected from falling objects.

29 CFR 1926.451(a)(16)

People working or walking near a scaffold must be protected from falling objects by an 18-gauge 1/2

inch wire mesh screen, or the equivalent, mounted between the scaffold's toeboard and guardrail.

29 CFR 1926.451(a)(6)

Load capacity

Scaffolds and their components must be able to support at least four times their maximum intended load.

29 CFR 1926.451(a)(7)

All load-carrying timber members of scaffold framing must be construction-grade lumber with a minimum 1,500 p.s.i. fiber stress in bending.

29 CFR 1926.451(a)(9)

Damage

Damaged scaffolds and accessories must be immediately repaired or replaced. See:

1926.451(a)(8)

Planking

All planking must be scaffold grade or the equivalent.

Platform planking must be overlapped at least 12 inches or secured so that it will not move.

See: 1926.451(a)(10) & 1926.451(a) (12)

Scaffold planks must extend over their end supports at least six inches, but no more than 12 inches. See: 1926.451(a)(14)

The maximum permissible spans for planks 2x10 or wider vary depending on the working load and whether the lumber is full or nominal thickness. See: 1926.451(a)(10)

Full-thickness planks 11/4x9 inch or wider cannot have a span greater than four feet.

See: 1926.451(a)(11)

Access

Scaffolds must be equipped with an access ladder or a similar means of safe access. See: 1926.451(a)(13)

Note: Ladders built into the end-frames of scaffolds must have a clear distance of 16 inches

between side rails. The rungs must be equally spaced, not less than 10 inches, nor more than 14 inches apart.

Poles, legs, uprights

Scaffold poles, legs or uprights must be plumb, securely and rigidly braced. See: 1926.451(a)(15)

Slippery conditions

Slippery conditions on scaffolds must be eliminated as soon as possible after they occur. See: 1926.451(a)(17)

Shore and lean-to scaffolds

Shore or lean-to scaffolds are prohibited. See: 1926.451(a)(20)

Wood pole scaffold requirements

Wood pole scaffolds are used frequently in wood frame construction projects. Workers and employers who use these scaffolds should understand how to erect, use, and dismantle them. OSHA's wood pole scaffold requirements from Subdivision L are summarized below.

Scaffold Poles

Scaffold poles must bear on a foundation of sufficient size and strength to prevent the poles from settling. All poles must be set plumb.

29 CFR 1926.451(c)(2)

If wood poles are spliced, the ends must be squared and the upper section must rest squarely on the lower section. Wood splice plates must be provided on at least two adjacent sides and must be not less than four feet in length. They must overlap the abutted ends equally and have the same width as the cross-sectional area of the pole. Splice plates or other materials of equivalent strength may also be used. See: 1926.451(b)(2)

Securing the scaffold

All pole scaffolds must be securely guyed or tied to the building or structure. If the height or length exceeds 25 feet, the scaffold must be secured at least every 25 feet vertically and horizontally. See: 1926.451(b)(4)

Putlogs (bearers)

Putlogs or bearers must be long enough to project at least three inches over the ledgers of the inner and outer rows of poles for support. See: 1926.451(b)(5)

Every wooden putlog on a single pole scaffold must be reinforced with a 3/16x2-inch steel strip, or equivalent, secured to its lower edge along its entire length. See: 1926.451(b)(6)

Ledgers

Must be long enough to extend over two pole spaces. See: 1926.451(b)(7)

Ledgers must not be spliced between the poles. See: 1926.451(b)(7)

Ledgers must be reinforced by bearing blocks securely nailed to the side of the pole to support the ledger. See: 1926.451(b)(7)

Bracing

Diagonal bracing must be provided to prevent the poles from moving parallel to the wall of the building, or from buckling. See: 1926.451(b)(8)

Cross bracing must be provided between the inner and outer sets of poles in independent pole scaffolds. The free ends of pole scaffolds must be cross braced. See: 1926.451(b)(9)

Full diagonal face bracing must be erected across the entire face of pole scaffolds in both directions. The braces must be spliced at the poles. The inner row of poles on medium- and heavy-duty scaffolds must be braced in a similar manner. See: 1926.451(b)(10)

Platform planks

Platform planks must be laid with their edges close together to prevent tools or fragments of material from falling. See: 1926.451(b)(11)

Where planking is lapped, each plank must lap its end supports at least 12 inches. Where the ends of planks abut each other to form a flush floor, the butt joint must be at the centerline of a pole. The abutted ends must rest on separate bearers. Intermediate beams must be provided where necessary to prevent planks from dislodging, and the ends must be secured. See: 1926.451(b)(12)

Platform planks must be laid to prevent tipping of any scaffold that is moved. The planks that meet the corner putlog at an angle must be laid first, extending over the diagonally placed putlog far enough to have a safe bearing without tipping. The planking running in the opposite direction at an angle must extend over and rest on the first layer of planking. See: 1926.451(b)(13)

Moving platforms

When platforms are moved to another level, the old platform must be left undisturbed until the new putlogs or bearers have been set in place. See: 1926.451(b)(14)

Guardrails

Guardrails with horizontal top rails and toeboards must be installed at all open sides and ends on all scaffolds more than 10 feet above a lower level. (Guardrails should be approximately 42 inches high and toe boards at least four inches high.) See: 1926.451(b)(15)

Construction and design requirements

All wood pole scaffolds 60 feet or less in height must be built and set up in accordance with Tables L-4 to L-10 of section 1926.451. If they are more than 60 feet in height, they must be designed by a qualified engineer. See: 1926.451(b)(16)

A light-duty wood pole scaffold.

Requirements for Other Types of Scaffolds

Many other types of scaffolds are used for wood-frame construction projects too. Scaffolds that must meet OSHA's Subdivision L safety regulations are listed in the table below. The paragraph number indicates where to look up the exact requirement in Division 3, Subdivision L.

Scaffold Type

Paragraph

* Bricklayers' square scaffolds

1926.451 (n)

* Carpenters' bracket scaffolds

1926.451 (m)

* Crawling boards or chicken ladders

1926.451 (v)

* Form scaffolds

1926.451 (x)

* Horse scaffolds

1926.451 (o)

* Interior hung scaffolds

1926.451 (r)

* Ladder jack scaffolds

1926.451 (s)

* Manually propelled mobile scaffolds

1926.451 (e)

* Masons' adjustable multiple-point suspension scaffolds

1926.451 (h)

* Needle beam scaffolds

1926.451 (p)

* Outrigger scaffolds

1926.451 (g)

* Plasterers, decorators', and large-area scaffolds

1926.451 (q)

* Pump jack scaffolds

1926.451 (y)

* Roofing brackets

1926.451 (n)

* Single-point adjustable suspension scaffolds

1926.451 (k)

* Stone setters' adjustable multiple-point suspension scaffolds

1926.451 (j)

* Swinging scaffolds, two-point suspension

1926.451 (i)

* Tube and coupler scaffolds

1926.451 (c)

* Tubular welded frame scaffolds

1926.451 (d)

* Window jack scaffolds

1926.451 (t)

Needs !

update to new 1926.451